

nano

830P



Operating and Maintenance Manual

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INTRODUCTION

The Nano / 830P (referred to as “the machine” in this manual) is designed to be a simple, quick and safe powered alternative to a portable scaffold tower, podium or a step ladder, for internal construction site and maintenance applications. It can be used in applications where previously portable scaffolding towers are erected on castors, and moved about on hard level surfaces. These types of tower are open to incorrect assembly, and are difficult and time consuming to work from. The Nano / 830P eliminates many of the risks associated with portable scaffold towers.

It is suitable for any application provided it is used within its specified operating parameters. If used for applications such as sand blasting, welding, paint spraying or with any other hazardous materials, then measures must be taken to ensure it does not become damaged in any way which may impair safety, or reliability. Additional protection for the operator may be required in some cases, which is the responsibility of the operator and/or the operator's employer.

The purpose of this manual is to provide essential basic information required to operate and maintain the machine.

This is not a workshop manual. Please contact the manufacturer or their agent for specific operation or maintenance information if in doubt.

The health and safety of the operator or maintenance technician is the responsibility of the individual and/or their employer and not Power Towers Ltd.

It is essential to be familiar with the operating, maintenance and safety guidelines contained within this manual prior to the operation of the machine.

Working Dimensions

Maximum working height:	4.50 m
Maximum platform height:	2.50 m
Platform dimensions:	1.00 m x 0.73 m
Working footprint:	1.195 m x 0.75 m
Safe working load:	200 kg (1 person plus tools)
Maximum manual force:	200 N
Max. gradient for operation:	0°
Max. wind force:	Indoor use 0 mph
Manual push force on level ground:	9 kg
Maximum total weight Inc payload:	485 kg
Maximum castor point load:	180 kg (1.77 kN)
Max. wheel force:	180 kg (1.77 kN)

Closed Dimensions

Length:	1.195 m
Width:	0.750 m
Height:	1.560 m
Weight:	285 kg

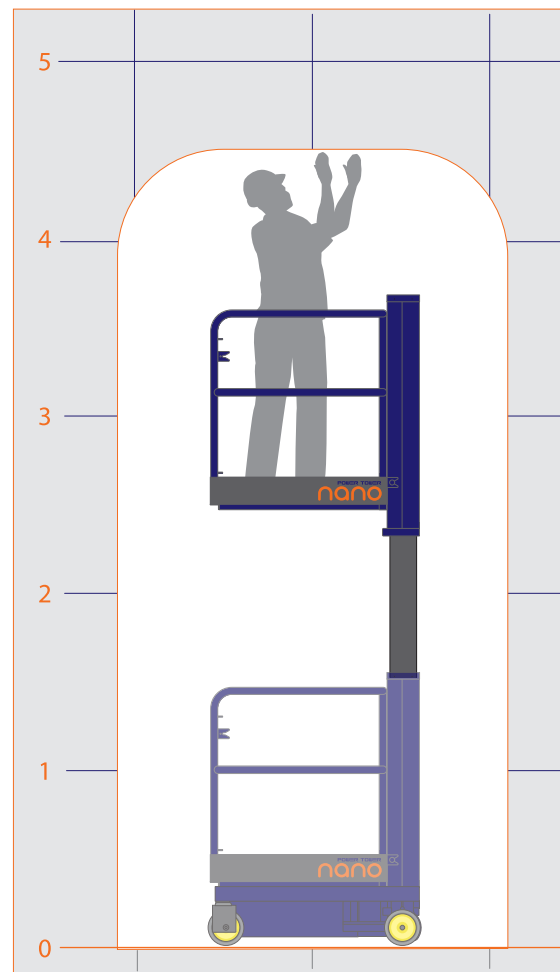
Power Source

Standard 12v DC Electric Motor

Battery Charger Specification

Input Voltage:	
If single voltage:	90-135V AC (UK) 180-265V AC (non UK)
If dual voltage:	90-265V AC
Frequency:	45-65 Hz
Output:	12V DC, 7A
Power sound level:	Less than 70dBA

Emission EN 55014N, EN 61000 – 3 – 2



DO'S

1. Read, understand and adhere to the instructions on the machine and in this manual.
2. Ensure pre-operation checks and operations are carried out in the manner described.
3. Use only on hard, level surfaces able to support the weight of the machine (e.g. concrete floor, tiled floor, hard wood floor).
4. Use the machine internally only.
5. Ensure operator is fit and does not suffer from a fear of heights.
6. Ensure the machine is correctly positioned with castor brakes on.
7. Ensure guardrail gate is closed and latched before elevation.
8. Ensure work area around the machine is cordoned off from pedestrians and other traffic.
9. Ensure operator is wearing the correct safety equipment.
10. Ensure the platform is correctly positioned so as not to come into contact with fixed or moving objects.
11. Ensure that the safe working load is evenly distributed on the platform.
12. Never leave the machine unattended without the castor brakes on.

DON'TS

1. Never exceed the safe working load 200kg (1 person plus tools).
2. Never use the machine on sloping or uneven ground.
3. Never use the machine as a goods lift or crane.
4. Never exceed horizontal forces (maximum horizontal force 200N).
5. Never use in the vicinity of live conductors.
6. Never try to move the machine on its castors when elevated.
7. Never extend the height of the platform by using boxes, steps, ladders etc.
8. Never modify the machine in any way without the full written approval of the manufacturer.
9. Never attempt to enter or exit the platform unless it is fully lowered.
10. Never operate the machine outdoors, or anywhere it may be affected by wind
11. Never affix the pendant controller to the guardrails or toolbox area of the platform; stow in its holster when not in use.
12. Never use the machine in an explosive environment.
13. Never use the machine if fatigued.
14. Never use the machine inappropriately or for 'horseplay'.
15. Never use the machine if under the influence of drugs or alcohol.
16. Never use the machine if suffering from poor health or using medication which might impair the safe operation of the machine.
17. Never use the machine if vision impaired by bright lighting.
18. Never push the machine on sloping surfaces without the use of a safe method.
19. Never push or pull objects with the platform.
20. Never use on uneven surfaces
21. Never attach loads such as boards or pipes outside the guardrails unless authorised to do so by the manufacturer. Never carry materials directly on the platform guardrails unless approved by Power Towers Ltd.
22. Never use a malfunctioning machine.

PRIMARY COMPONENT LOCATIONS



Do not operate until inspection and functional checks have been performed as specified below:

OPERATING PROCEDURES

It is the owners and/or the users responsibility to ensure that the machine is maintained and operated in accordance with the operation and maintenance procedures contained within this manual.

It is essential to be familiar with the correct operating procedures as outlined in this manual. The operator must have adequate training for this type of platform.

The machine is fitted with a safety harness point as standard. If the operator chooses to wear a safety harness, an approved 'fall restraint' type harness should be worn.

Operating procedures are divided into three key areas:

1. **Pre-operation checks.**
What to do before operating the machine.
2. **Normal operation.**
How to use the machine safely.
3. **Emergency operation.**
How to lower the machine without power or in the event of operator incapacity.

There is no specific legal requirement to wear a safety harness. However, there is an employers' requirement to ensure the correct equipment is used for a task and that it is used correctly and safely. For this requirement to be met, a risk assessment should be conducted to assess the potential risks and if an increase in operator safety can be achieved with a safety harness, then use a 'fall restraint' type harness only.



PRE-OPERATION CHECKS

1. Ensure there are no obvious signs of mechanical damage to the handrails, platform, lifting structure or chassis.
2. Check platform access gate closes when released and that the latch engages correctly.
3. Check castors and wheels rotate freely and are undamaged.
4. Check castor wheel and castor fixings. Check circlip (red ring) is correctly located on end of stub axle and retained with hub cap (Pic A.)
5. Check emergency lowering is functioning correctly (refer to procedure on p.8).
6. Ensure the battery (where applicable) is fully charged, referring to the LED or dial battery condition indicator on the pendant controller (Pic 5).
7. Ensure the hydraulic oil level is at the correct level. Do not overfill.
8. Check there are no hydraulic oil leaks and that all hydraulic connections are tight.
9. Cordon off area around machine in accordance with guidelines.

NORMAL OPERATION

Only use the machine internally, on hard level surfaces. Ensure a person is available at ground level to assist in case of emergency.

Position machine under application. Refer to working envelope diagram if necessary.

1. Apply both castor brakes (Pic 1).
2. Check spirit level to ensure machine is level (Pic 2).
3. Ensure the emergency lowering valve is closed (push and twist 90°, release - do not force) (Pic 3).
4. Turn key switch in emergency stop button (located at the base of the machine), then pull to release (Pic 4).
5. Battery condition indicator on pendant controller will indicate battery charge (Pic 5).
6. Check there are no overhead obstructions.
7. Enter platform via step and gate and ensure the gate is closed and latched correctly when in platform. Do not elevate if the access gate is not closed and latched.
8. Press ⬆ arrowed button to elevate. Press ⬇ arrowed button to descend.
9. In case of uncontrolled platform elevation or descent, depress red emergency stop button (on pendant controller or at base of machine - refer to Pics 4 & 5).

The user shall obtain the guidance and approval of the manufacturer in the event of any special working methods or conditions which are outside those specified by the manufacturer.



Pic. A



Never affix the pendant controller to the guardrails or toolbox area of the platform

EMERGENCY LOWERING OPERATION

Never attempt to recover the machine/operator if there is any possibility the machine is contacting any live wiring/cabling and is therefore potentially 'live'.

The Emergency Lowering Procedure is for lowering the platform from height in case of platform control failure or operator incapacity and for no other purpose.

To lower the platform:

1. Locate emergency lowering valve at base of machine (see Pic, right).
2. Push, twist 90 degrees anti-clockwise and release the knob.
The platform will lower. Pushing and twisting the knob clockwise will stop the descent at anytime.
3. Check the area below the platform is free from obstructions when lowering.
4. Keep clear of the structure as it descends.
5. Do not force the release knob.



BATTERY CHARGING (110V IP20 CHARGER)

Check the battery fluid levels and charge in a well ventilated area, only if Lead Acid batteries are fitted (not required for maintenance free AGM batteries).

The battery charger is located under the checkerplate cover (Pic A).

The charging lead is fitted with a yellow 110V plug and is located on the exterior of the machine base (Pic B). The input voltage is 90-135V AC.

Ensure the battery isolator is switched off when charging.

Plug the charger into an available power supply and ensure the Green LED illuminates.

The Amber LED indicates that the battery is charging (Pic C). The charge is complete when the Amber LED stops flashing and becomes solid.

Additionally, the battery charge indicator on the pendant controller will indicate charge level. The charge is complete when the 2 Green LEDs are illuminated, if the LED indicator is fitted to the pendant controller (Pic D), or the pointer is fully over to the right, if the Dial indicator is fitted to the pendant controller (Pic E).

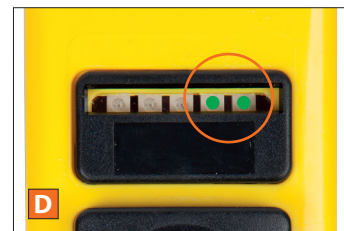
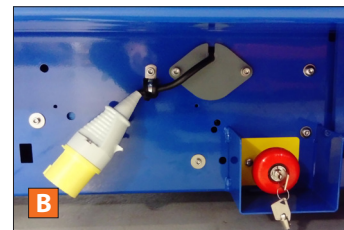
The battery charger can be connected to the mains supply at any time or left for extended periods.

The machine can be operated when the charger is connected, although this is not recommended.

All mains supply should be protected with a suitable RCD.

Note: The charger is fitted with a 15A automotive spade fuse (blue). If the fuse has failed, the indicator lights will still operate. The fuse may have failed if the battery is heavily discharged and the motor is run when the charger is switched on. In such an event, the fuse is simple to replace;

Ensure battery isolator is switched off and that the mains supply is disconnected before attempting to check or change fuse.



BATTERY CHARGING (110V IP65 CHARGER)

Check the battery fluid levels and charge in a well ventilated area, only if Lead Acid batteries are fitted (not required for maintenance free AGM batteries).

The battery charger is located under the checkerplate cover (Pic A).

The charging lead is fitted with a yellow 110V plug and is located on the exterior of the machine base (Pic B). The input voltage is 90-135V AC.

Ensure the battery isolator is switched off when charging.

Plug into an available power supply and ensure the Yellow LED illuminates. If the Yellow LED is flashing then disconnect and reconnect to the power supply. If flashing continues then seek technical help.

The Yellow and Green LEDs indicate that the battery is charging (Pic C). The charge is complete when only the Green LED is on.

Additionally, the battery charge indicator on the pendant controller will indicate charge level. The charge is complete when the 2 Green LEDs are illuminated, if the LED indicator is fitted to the pendant controller (Pic D), or the pointer is fully over to the right, if the Dial indicator is fitted to the pendant controller (Pic E).

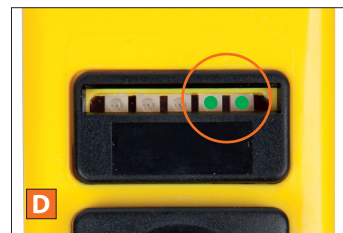
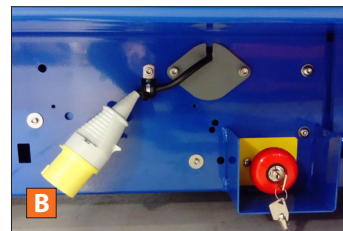
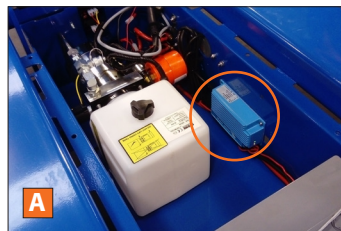
The battery charger can be connected to the mains supply at any time or left for extended periods.

The machine can be operated when the charger is connected, although this is not recommended.

All mains supply should be protected with a suitable RCD.

Note: The charger is fitted with a 10A automotive spade fuse (red). If the fuse has failed, the indicator lights will still operate. The fuse may have failed if the battery is heavily discharged and the motor is run when the charger is switched on. In such an event, the fuse is simple to replace.

Ensure battery isolator is switched off and that the mains supply is disconnected before attempting to check or change fuse.



BATTERY CHARGING (230V IP65 CHARGER)

Check the battery fluid levels and charge in a well ventilated area, only if Lead Acid batteries are fitted (not required for maintenance free AGM batteries).

The battery charger is located under the checkerplate cover (Pic A).

The charging lead is fitted with a black 230V plug and is located on the exterior of the machine base (Pic B). The input voltage is 180-265V AC.

Ensure the battery isolator is switched off when charging.

Plug the charger into an available power supply and ensure the “low” LED illuminates (Pic C). If flashing, a fault is indicated. Disconnect and reconnect to the mains supply. If flashing continues seek technical support.

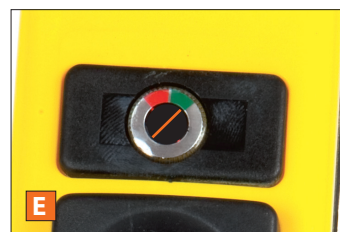
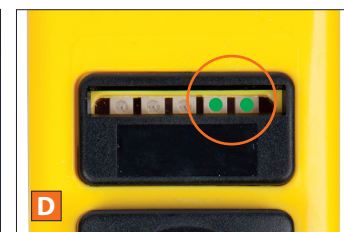
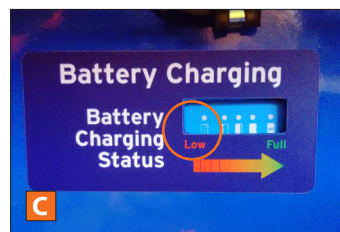
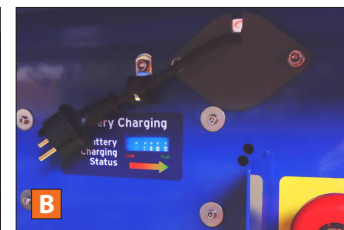
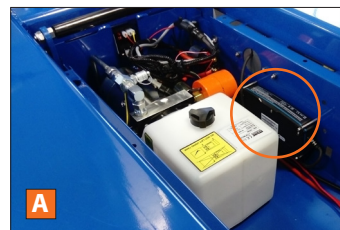
The LEDs will illuminate in sequence and when the “full” LED is illuminated the charge is complete.

Additionally, the battery charge indicator on the pendant controller will indicate charge level. The charge is complete when the 2 Green LEDs are illuminated, if the LED indicator is fitted to the pendant controller (Pic D), or the pointer is fully over to the right, if the Dial indicator is fitted to the pendant controller (Pic E).

The battery charger can be connected to the mains supply at any time or left for extended periods.

The machine can be operated when the charger is connected, although this is not recommended.

All mains supply should be protected with a suitable RCD.



Please note that whilst the machine is extremely simple to maintain, all work must be carried out by a competent person.

When removing checkerplate cover for maintenance purposes, first switch off by depressing the emergency stop/battery isolator button located at the base of the machine. Use appropriate safety/personal protective equipment where necessary.

DAILY MAINTENANCE

Tilt cage by releasing gate latch on cage mount (see pic). Pull cage frame from gate end and cage will lift and tilt assisted by gas strut. Ensure gas strut is fully extended and that the safety chock is in place. You can now access the powerpack housing. Unscrew the black retaining knobs and lift out the checkerplate cover.

1. Check Battery Electrolyte Level: (Not applicable to AGM Batteries)

Remove battery cover and battery caps. Ensure the electrolyte covers the plates by no more than 1mm – 2mm. Replenish with distilled water to this level, only if the electrolyte level is below the top of the plates.

2. Check Hydraulic Oil Level:

Ensure the tank is not overfilled. The level must only be checked when the machine is in the transport position. The correct level in this condition is approximately 3/4 from the base of the tank, as indicated by the line.

3. Ensure there is no obvious mechanical damage to the handrails, entrance gate, post or structure of chassis. Also check the castors and wheels are undamaged, rotate freely and are secured to machine.

4. Check hydraulic connections around the pump and base of cylinder are tight and undamaged.

5. Check the spirit level to ensure it is clearly legible and undamaged.

6. Check all functions operate correctly including movement alarm and emergency stops.
7. Ensure mast surfaces are clean and not greased.



WEEKLY MAINTENANCE

Check battery terminal connections are tight.

MONTHLY MAINTENANCE

Check Battery Specific Gravity:

On a monthly basis check the specific gravity in each of the battery cells. When a battery is correctly fully charged the specific gravity should be 1.27 - 1.3. The specific gravity reading should be equal across the cells, if not repeat the full charge cycle.

Check rollers and mast surfaces for damage. Ensure brushes are fitted correctly and brush against mast surface.

HYDRAULIC OIL

The hydraulic oil must be replaced on an annual basis. If the oil is not replaced, then premature wear and failure of components will occur. To drain the hydraulic tank, the mast must be in the transport position, and the platform tilted to allow access to the motor/pump unit. The only practical method to remove the oil from the tank is to use a syringe suitable for hydraulic oil, which are easily obtainable, or a vacuum system for hydraulic oil. The hydraulic steel pipe connection to the cylinder must not be disconnected, unless by a competent person. If the connection has been disconnected, then a full pressure test of the system must be conducted prior to placing the machine back into service. No leaks must be evident when the pressure test is conducted.

Refill with grade 32 mineral oil.

WHEELS AND CASTORS

It is absolutely essential that the wheels and castors are maintained in good condition at all times, for two reasons:

The first is that they act as the stabilisers, and whilst their load capacity is over rated for the application, any failure could result in a serious accident. Secondly, if the bearings become tight, then it will make the machine difficult to manoeuvre.

A measure of horizontal push force can simply be made to determine the condition of the wheel bearings. On a flat smooth surface the machine should move with a force of 9 – 10 kg at the mid guard rail height. The maximum allowance is 20 kg.

Obviously this force is dependant upon the surface and gradient, but the above is the recognised method of measurement, in accordance with HSE guidelines.

Check rear wheels to ensure retention circlip is securely fitted to end of stub axle and plastic cap is fitted over it.

MOTOR CONTACTOR SOLENOIDS

When conducting the six monthly LOLER inspection, check the correct functioning of the two motor contactors.

Fit new contactors after every three years.

SUZI CABLE CONNECTOR PLUG MAINTENANCE

In order to ensure the reliable and correct operation of the machine it is highly recommended that on a six monthly basis the connector plug be separated and the condition of the connector plugs pins be noted and an anti-corrosive spray be applied before reassembly.

Locate the plug on the end of the wire from the suzi cable and holding both the wires and the rubber body of the connector plug, pull the two halves apart. The plugs cans sometimes be difficult to separate and it may be found that rolling back the outer boot prior to pulling the plug apart can help.

Once separated look at the condition of the pins. If found to be corrosion free then spray the pins and sockets with Ambersil S4. Hold each half of the connector plug vertically and spray a liberal amount of the anti-corrosive grease into the plug and pins and allow to drain into the back of the plug body. The spray can also be applied to the rubber boot. Re-assemble the plug.

If the pins are found to have corrosion they must be replaced. In this case please refer to Power Towers technical department for assistance.

When replacing components for any reason, only use OEM specification parts, either supplied from the manufacturer or authorised in writing by the manufacturer. Warranties and design approvals will be void if alternative components are fitted.

It is essential to obtain manufacturer's approval of any alteration which might affect stability, strength or performance in writing before proceeding.

MAST MAINTENANCE

Essentially the mast is maintenance free. The mast sections run on maintenance free rollers, and on the outer mast surface where the roller runs, a brush is fitted to keep the mast surface clean, preventing debris picking up in the roller. In addition to these rollers, there are 6 external plastic screws fitted, which act to hold the mast sections together in torsion. These screws are fitted with M24 lock nuts and can easily be identified at the lower end of the mast sections. Inside the mast there are additional wear pads and rollers, which can be accessed from the top of the mast. These items are not adjustable, and it is very unlikely that any wear will occur.

The mast is raised and lowered with a multistage hydraulic piston, which raises the outer mast section first, followed by the middle mast section. When the mast is lowered, the sections close in the reverse sequence i.e. the middle section and outer section close together until the bottom of the middle section contacts the lower rest buffers, and the outer section continues to close over the middle section. It is essential the mast closes in this sequence.

To ensure the mast sections move in the correct sequence, and do not bind, ensure the wear screws are not over tightened as follows.

Ensure the gap between the overlapping mast section and the inner mast section is even on both sides. The distance is approximately 12mm, but may vary slightly due to manufacturing tolerances.

Loosen the wear screw lock nut and turn the screw until it just contacts the inner mast surface. Do not force the screw. Tighten the locknut using caution not to shear the screw thread. Raise and lower the mast to check it does not bind. (See picture).

In practice, it is far more likely that the screws may wear so an excessive gap between the mast section and the wear screw develops. This will be evident by free sideways movement of the platform. If this free movement is thought to be excessive, check the gap between the screw and the mast with a feeler gauge. The correct gap should be no more than 0.2mm, although the mast is serviceable with a gap up to 0.5mm.



Mast wear screw adjustment

Important.

These instructions apply to all machines FROM serial no. 26953115C

CASTOR SAFETY & MAINTENANCE

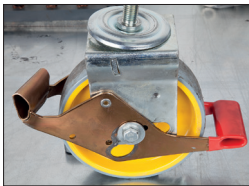
In order to ensure the castors are maintained in serviceable and safe condition, regular inspection is required, especially where arduous conditions are known to be involved or there is a suspicion of misuse or abuse. The other key element to ensure is in safe serviceable condition, is the castor fixing bolt, the condition of which can usually be determined from the condition of the castor bracket.

The castor is highly rated for the application so if visible distortion is evident a significant impact will have occurred and under these conditions the castor and fixing must be replaced.

Typical signs of impact which would require castor and fixing replacement:



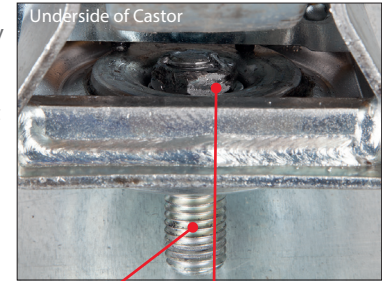
Foot pedal distortion as a result of a significant impact; it is likely the top plate and bearing will be distorted as well.



Mounting plate distortion as a result of a single significant impact or multiple lower level impacts. **Even if the rest of the castor is in good condition, it must be replaced.**

It may be thought feasible to repair the castor in a number of these instances, but serious structural damage will have occurred to the head bearing and castor assembly as well as possibly damage to the main mounting bolt.

When inspecting a castor in order to determine its serviceability, pay particular attention to the head swivel bearing (compare to a new one if possible) and the boss/rivet which goes through the centre of the swivel bearing and which clamps the assembly together.



Castor mounting bolt

Swivel bearing head should feel free to rotate and not loose

Castor Fixing Bolt (3/4 UNC):
Castor Axle Bolt:

Torque - 120 Nm
Torque - 40 Nm

Important.

These instructions apply to all machines BEFORE serial no. 26953115C

CASTOR SAFETY & MAINTENANCE

In order to ensure the castors are maintained in safe, serviceable condition, regular inspection is required, especially where arduous conditions are known to be involved or there is a suspicion of misuse or abuse.

When inspecting the castor, pay particular attention to the head swivel bearing and the castor fixing bolt which goes through the centre.

The castor is highly rated for the application so if visible distortion is evident a significant impact will have occurred and under these conditions the castor and fixing bolt must be replaced (see fitting procedure, adjacent, for PT-M-102 Replacement castor and fixings kit).

If the castor is in good condition, with no visible distortion, then only the castor fixings need to be replaced (refer to page 17 for fitting procedure for PT-M-170 Replacement castor fixings kit).

Typical signs of impact which would require castor and fixing replacement:



Side impact and foot pedal distortion as a result of a significant side impact.



Foot pedal distortion as a result of a significant frontal impact; it is likely the top plate and bearing will be distorted as well.



Top mounting plate distortion as a result of a single significant impact or multiple lower level impacts.

Even if the rest of the castor is in good condition, it must be replaced.

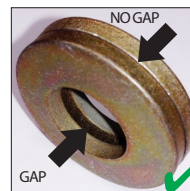
It may be thought feasible to repair the castor in a number of these instances, but serious structural damage will have occurred to the head bearing and castor assembly as well as possibly damage to the main fixing bolt. THE CASTOR AND FIXING BOLT MUST BE REPLACED.

FITTING PROCEDURE FOR PT-M-102 REPLACEMENT CASTOR AND FIXINGS KIT

Kit comprises of;

- 1 off Castor with M12x60 Hex head bolt 10.9 BZP
- 1 off M12 Nyloc nut grade 10 BZP
- 2 off M12 Disc spring (also known as Belleville washer)

1. Raise the machine with a suitable jack, hoist or forklift.
2. Undo and remove the castor fixing nut and remove the castor from the machine. Discard the castor, M12 fixing bolt, M12 nyloc nut and all washers.
3. Fit the new castor to the machine.
4. Fit the 2 off disc springs, making sure that they are correctly orientated so that there is no gap between the outer edges of the disc spring and there is a gap between the inner edges of the disc spring, as shown.



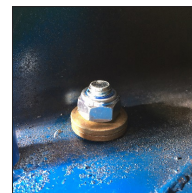
FIT DISC SPRINGS LIKE THIS



DO NOT FIT DISC SPRINGS LIKE THIS



5. Fit the new nyloc nut and torque to 80Nm.
6. Check that the castor swivels freely, and lower the machine to the ground.
7. Check the castor rolls freely and apply the castor brake by operating the foot pedal.
8. Apply pushing force to the machine and check that this is resisted by the castor brake.



**Castor Fixing Bolt (M12):
Castor Axle Bolt:**

**Torque - 80 Nm
Torque - 40 Nm**

Power Towers Limited strongly recommends replacing any castor assembly or fixing bolt that is over 3 years old with a new one.

FITTING PROCEDURE FOR PT-M-170 REPLACEMENT CASTOR FIXINGS KIT

Kit comprises of;

Castor axle fixings

2 off M12 Washer form C

1 off M12 Lock nut grade 10 BZP

1 off M12 Shakeproof washer

1 off M12x90 Hex head bolt 10.9 BZP

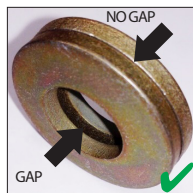
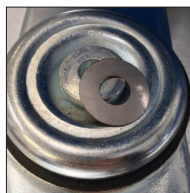
Chassis fixings

1 off M12 Nyloc nut grade 10 BZP

1 off M12x60 Hex head bolt 10.9 BZP

2 off M12 Disc spring (also known as Belleville washer)

1. Loosen the castor axle bolt while the machine is on the ground.
2. Raise the machine with a suitable jack, hoist or forklift.
3. Remove the castor axle bolt, axle spacer and axle lock nut and remove the wheel. Discard the old castor axle bolt and axle lock nut. Do not discard the axle spacer or wheel.
4. Undo the castor fixing nut and remove the castor frame from the machine. Discard the old castor fixing nut, castor fixing nut and washer.
5. If there is a thin spacer washer present between the castor swivel head and the chassis then remove and discard it.
6. Fit the new castor fixing bolt to the castor frame, and then refit the castor frame to the machine.
7. Fit the 2 off disc springs, making sure that they are correctly orientated so that there is no gap between the outer edges of the disc spring and there is a gap between the inner edges of the disc spring, as shown.



FIT DISC SPRINGS LIKE THIS



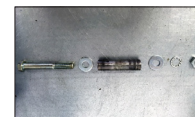
DO NOT FIT DISC SPRINGS LIKE THIS



8. Fit the new nyloc nut and torque to 80Nm.



9. Refit the wheel, axle spacer and new axle bolt, washers, shakeproof washer and lock nut, applying some high strength threadlock (Loctite 648) to the lock nut.



10. Torque the lock nut to 40Nm.



11. Check that the castor swivels freely, and lower the machine to the ground.
12. Check the castor rolls freely and apply the castor brake by operating the foot pedal.
13. Apply pushing force to the machine and check that this is resisted by the castor brake.

Castor Fixing Bolt (M12):

Castor Axle Bolt:

Torque - 80 Nm

Torque - 40 Nm

Power Towers Limited strongly recommends replacing any castor assembly or fixing bolt that is over 3 years old with a new one.

MAINTENANCE FREQUENCY

The machine must have a thorough (LOLER) examination by a competent person at six monthly intervals.

MAINTENANCE FREQUENCY TABLE				
Item	Daily	Monthly	6 Months	12 Months
Batteries/Connections	●			
Battery Specific Gravity		●		
Oil Level	●			
Visual Inspection	●			
Spirit Level	●			
Wheels & Castors	●			
Check Mast & Rollers		●		
Thorough Examination			●	
Change Hydraulic Oil				●
Motor Contactor Solenoids			●	
Auto-lok brake wheels - fixings	●			

Thorough examination must include checking:

- All electrical connections, including battery.
- All hydraulic connections and cylinder for leaks.
- All connections are secure to powerpack.
- Handrails are undamaged and secure.
- Operation of gate latch.
- Platform tray condition.
- Mechanical condition of lifting structure and chassis.

- Swivel castor condition and security.
- Axle and wheels for condition and security.
- Condition and operation of spirit level.
- Condition of component and battery covers.
- Condition of all labelling.
- Carry out a full operation check and load test.
- Operation of motor contactors and that they have been replaced after every three years of service.

STORAGE

If the machine is to be taken out of operation for a period longer than one month, the following precautions should be taken.

Ideally, the battery charger should be switched on. The charger has an inbuilt maintenance mode, and will maintain the battery in good condition indefinitely. If a Lead-Acid battery is fitted then the electrolyte level must still be checked periodically (not required if AGM battery is fitted). If this is not practical, then the charger should be switched on once a week for half an hour. This is especially important in cold conditions.

The hydraulic oil must be replaced (recommended after 3 months of non-use) as for the procedure in the Maintenance Procedures section.

If the storage period is for an undetermined period then it is advisable that the battery be removed and stored in a secure battery storage container. We would also advise that all external electrical and hydraulic connections be wax coated to prevent corrosion.

WARRANTY

Your Nano / 830P (The Machine) is covered by a parts and components warranty as stated in the purchase terms and conditions (excluding battery and battery charger).

The Manufacturer, Power Towers Ltd (The Company), undertakes to replace or repair, free of charge, any defective part or component which the company considers to be due to faulty workmanship or material, within the warranty period, except for:

Defects arising from neglect, misuse or unauthorised modifications.

Damage caused by abuse, misuse, dropping or other similar damage caused by or as a result of failure to follow transportation, storage, installation, loading or operation instructions.

Alterations, additions or repairs carried out by persons other than the Manufacturer or their recognised distributors.

Transportation or shipment costs to and from the Manufacturer or their recognised agents, for repair or assessment against a warranty claim, on the machine or component.

Materials and/or labour costs to renew, repair or replace components due to fair wear and tear.

Faults arising from the use of non-standard or additional parts, or any consequential damage or wear caused by the fitting or use of such parts.

IMPORTANT

Warranty may, at the sole discretion of the Manufacturer, be voided if the scheduled service/inspections are not carried out in accordance with this manual.

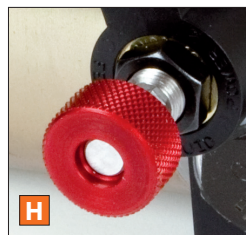
The Manufacturer and/or their recognised agents, directors, employees or insurers will not be held liable for consequential or other damages, losses or expenses in connection with or by reason of or the inability to use the Nano / 830P for any purpose.

MODIFICATIONS

If additional equipment or any third party work, modifications or alterations are to be carried out on the machine which will involve any welding, drilling or any form of cutting or distortion of materials, full written approval must be obtained from the Manufacturer prior to the work being carried out.

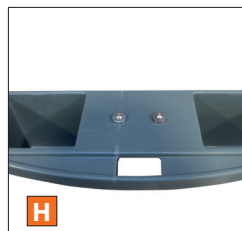
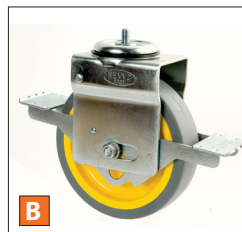
ELECTRICAL PARTS		Part No.
A	Control box c/w Cable	PTN-E-201
B	Emergency Stop/Battery Isolator	PTN-E-200
C	Battery Isolator Plastic Button	PTN-E-206
D	Battery Charger (110V IP20)	PT-E-001
*	Battery Charger (110V IP65)	PT-E-001-2
*	Battery charger (230V IP65)	PT-E-001E
E	12V 105A Lead Acid Battery	PT-E-002
*	AGM Battery	PT-E-002AGM
F	110V Plug	PT-E-010
HYDRAULIC PARTS		Part No.
G	12V DC Powerpack Complete	PTN-H-251
H	Emergency Lowering Solenoid c/w Valve	PTN-H-255
*	Emergency Lowering Valve Cartridge	PTN-H-256
I	Steel Pipe Kit	PTN-H-260
*	Cylinder	PTN-H-276C
*	Cylinder Seal Kit	PTN-H-277

* Item not shown here



MECHANICAL & MISCELLANEOUS PARTS Part No.

A	Wheel	PT-M-103
B	Swivel Castor*	PT-M-102
C	Swivel Castor**	PT-M-102-2
D	Spirit Level	PT-M-106
E	Guardrails c/w Gate	PTN-M-350
F	Rubber Buffer	PT-M-126
G	Cover Securing Knob	PT-M-107
H	Tool Tray	PTN-M-303
I	Buffer Wheel	PTN-M-302
J	Decal Set 1	PTN-M-322
	Decal Set 2 (Nano)	PTN-M-310
	Decal Set 2 (830P)	PTN-M-310-2
K	Keys (pair)	PTN-M-341
L	Gas Strut	PTN-M-340
M	Checkerplate Cover	PTN-M-320



CASTOR CHANGES:

* (PIC B) BEFORE SERIAL NO. 26953115C

** (PIC C) FROM SERIAL NO. 26953115C

